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ABSTRACT

The question of whether adolescents turn to arcade video games for gratifications similar to those met by television viewing was investigated with 244 children 10 to 14 years old, who were attending a statewide summer sports camp. A questionnaire required subjects to rate the importance of 17 need statements and provide basic demographic information, details about their home viewing environment based on Medrich's "constant television household" index, and specific characteristics about their arcade video game activities. Subjects who indicated some arcade game playing were also asked to respond to a series of 27 statements about possible gratifications of arcade video game play. Results showed that adolescents play video games for many of the reasons they watch television and more. Games temporarily transport them from life's problems, provide a sense of personal involvement in the action, and are perceived, particularly by heavy users, as a source of companionship. Heavy users also more often rated the games higher than human friends on levels of excitement, ease of interaction, and fun, and believed that the games teach players about people. A 17-item reference list and 5 tables are included. (LMM)

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Some Uses and Gratifications of Arcade Video Game Playing

by Gary W. Selnow

Video Games -- Revised, February 19, 1984

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Introduction

The proliferation of hi-tech products brought about by rapid advancements in computer technology and aggressive marketing schemes has outpaced the capacity of social science to assess the impact on human users. Soon after the silicon chip quietly entered the U.S. consumer market in the hull of a pocket calculator it began to appear in many forms, not just in faster, smaller, less expensive replacements of equipment on the shelf, but in entirely innovative products. One of the more popular of these is the video arcade game which offers a new technology in a new format to a previously untapped clientele. Within a half-dozen or so years, the profusion of video arcades has become evident throughout the United States, drawing from consumers (and particularly young consumers) millions of dollars -- a quarter at a time. More than just money must be expended to play the games, however, it also costs the user's time, and it is this charge that has prompted the early phases of research on video game players.

Until very recently, public debate over the impact of video arcade games has been guided by speculation based on anecdotal evidence or personal encounters with the machines or their players rather than on more substantive information. Evidence of this claim was well demonstrated in late 1982 when Surgeon General C. Everett Koop issued a statement indicting video games for producing "aberrations in childhood behavior" largely because of their capacity to cause users to be addicted "body and soul" (13, p. A-16). He said, furthermore, the games offered "nothing constructive" (17, p. A-22). The Surgeon General qualified his statements, however, explaining "he had no

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scientific evidence on the effects of video games on children," (13, p. A-16) and that his claims represented nothing more than his personal judgement. In a rigorous literature search, Ng and Brooks (cited in 3) could find no research on the impact of video games on users. "They both report that in a search of the scientific literature no studies addressing the issue were found" (3, p. 160). The present author, too, came up dry in a literature search of most recent social science cumulative indexes.[1]

Only very recently has the social science machinery begun to tool up for the task of understanding the impact of games on the users. In what appears to be the seminal study, Gibb, et al. (3) measured 280 video game players on the personality dimensions of self-esteem--self-degradation, social deviancy--social conformity, hostility--kindness, social withdrawal--gregariousness, obsessive--compulsive and achievement motivation. In nearly every instance these researchers failed to find any significant relationships between these measures and the amount of time spent per week at the games. They found only that females with longer experience at video games were higher in achievement motivation than females with less experience. The subject pool for this study, however, included 12 to 34 year-olds (with a mean age around 19 years), a broad range wherein effects, particularly among the youngest subjects, may be obscured.

The present study grew from findings of previous research conducted by the author[2] in which it was discovered that heavy users of television were also heavy users of video arcade games. In that study total weekly television viewing time was positively related to several measures of arcade video game playing including frequency of arcade attendance and the amount of money spent at the games. Cast in Robinson's theoretical

framework (14), in which alternatives to television viewing are generally viewed as either complementary to or in competition with the viewing activity, it is clear that television viewing and arcade game playing share a complementary relationship. Spending time with video games, accordingly, does not rob the heavy viewer of the opportunity to watch television; it may displace some activities, but television viewing is not likely one of them. Meyerson discusses this phenomenon further in his description of "the more, the more," where he suggests that motivations which drive an individual to engage extensively in one activity correspondingly compel that person to engage in other activities as well (12), perhaps to achieve similar gratifications.

It is important, particularly in these early phases of research on the impact of video games, to gain an insight into user motivations for choosing to play the games. Stated simply, why do children play video games at the arcades? In light of earlier findings linking television viewing and video arcade game playing, cues for the present study come from literature on television uses and gratifications research which have, over the years, developed a typology and methodology that is intuitively appealing for the current task. Adolescents who have demonstrated a propensity to view large amounts of television, it appears, are now readily adapting to a new technology not at the expense of television viewing, but in support of it. It is important to discover if these individuals are seeking from video games more of the television-supplied gratifications or if they are pursuing unfulfilled gratifications not adequately provided by television viewing (or other sources). It is this genre of question which is, perhaps, best served by an approach already established in television uses and gratifications literature.

Despite individual differences among outlooks on uses and gratifications

research nearly all the work in this field seeks to discover fundamental reasons for which television viewers spend time with the medium. Specifically, typical studies in this field deal with one or some combination of questions asking why people turn to television, what they hope to achieve from the viewing experience, and, as a result of viewing, if their needs are actually fulfilled. The common sense nature of such questions deceptively suggests a simplicity which is rarely evident in the answers. As social scientists know too well, people are not so rational in their thinking as to cross-reference a catalog of personal needs against a listing of media capable of satisfying those needs. Even if people could recognize their needs at any given time, and they could identify a medium capable of gratifying those needs, it is doubtful that the media stand as the only or even the best sources of gratification. With some notable exceptions (e.g. 5,6), as Dimmick et al. (2) point out, research on uses and gratifications is generally "mediacentric" in nature where the methodological paradigm provides for needs gratification only by the media. Naturally, a host of alternative sources of gratifications exist to serve individual needs. The question, then, is not which of the media are available, but how do the media integrate into the total repertoire of potential sources of gratification.

With all the possible choices that exist to gratify an individual's needs (known as "functional alternatives") it is generally assumed the source with the potential to meet best that need will be selected by the rational individual. Although this proposition may be valid, its unidimensionality undermines its usefulness. For instance, the need for companionship may be gratified to some extent by television, which is available at the time, even though a human friend, who may not be available, would meet more completely the companionship need. In this

view, one may settle for a source which offers less than maximum possible needs gratification simply because it conveniently happens to be there.

This notion is further refined by March and Simon (7) who introduce the concept of "satisficing" behavior which describes how the choice of a gratification source is based on the capacity of that source to satisfy the need, not necessarily to optimize it. "An example is the difference between searching a haystack to find the sharpest needle in it and searching the haystack to find a needle sharp enough to sew with" (7, p. 141). Here the individual will seek a source of gratifications until he/she comes across one that is satisfactory, defined as meeting the minimal level of acceptance. In a well presented discussion on the subject, Dimmick et al. explain that "satisficing rather than optimizing behavior results not only from the limitations on the search process imposed by limited time and energy but also from the tendency for expectations of satisfaction or gratification to adjust to achievement" (2, p. 10). These authors note the optimal alternative may elude the individual due to a perception of high costs, or for other reasons which make it appear unattainable. Consequently, "the individual may 'settle for' a less than maximally gratifying activity by adjusting downward the initially high expectation" (2, p. 11).

In the late 1960's researchers from the United States and abroad began compiling a catalog of needs found to be gratified by television viewing. McQuail reported (10) four categories including diversion, personal relationships, personal identity and surveillance. Robinson (15) listed similiar categories. In an expansion and refinement of this list for young subjects (9 to 15 years), Greenberg has identified from his sample of children eight clusters of reasons for watching television:

to pass time, to forget (as a means of diversion), to learn about things, to learn about myself, for arousal, for relaxation, for companionship, and as a habit (4). This typology of reasons for viewing has served successfully as the basis for subsequent studies exploring components of the television uses and gratifications question (e.g. 15).

Given the complementary relationship between television viewing and arcade video game playing it appears reasonable, at least in these beginning stages of research on video game gratifications, to include reasons that have been recognized previously in the literature. Do adolescents turn to arcade video games for gratifications similar to those met by television viewing?

In all, 244 children (161 males, 83 females) between the ages of 10 and 14 years, attending a state-wide summer sports camp, completed a questionnaire comprised of three distinct portions. 1) In an approach introduced by Katz, et al. (5) and subsequently used successfully by Kippax and Murray (6), subjects were first asked to use a three-point scale to rate the importance of seventeen need statements. Information gathered here will provide a measure of initial needs-states which subsequently may help explain differential arcade game usage patterns. Specific items for this instrument were developed, in part, from the list provided by Greenberg (4), and, in part, from video game-specific gratifications disclosed in a pretest study.

2) The second portion of the questionnaire recorded basic demographic information, details about the subject's home television viewing environment based on Medrich's (11) "constant television household" index, and specific characteristics about the subjects' arcade video game playing activities. It is important to note that information gathered

throughout this study is restricted to arcade video game playing and does not deal with home video game playing. The decision to focus on arcade games is based on findings of an earlier study by the author[2] in which it was found that video parlor playing was complementary with television viewing while home video playing was mildly competitive with viewing, suggesting a very different kind of relationship. In order to avoid confusion among the subjects it was decided to focus all questions on the arcade games.

3) Subjects who claimed to engage in at least some arcade game playing were asked to complete part three of the questionnaire. Here they were presented with a series of 27 statements about possible gratifications of arcade video game playing and asked to respond to each with a four-point scale ranging from "always true" to "never true." Most of these items, too, were taken from Greenberg's "needs" list. Additional video game-specific statements based on pretest disclosures were included.[3]

While the methodologies employed here are inappropriate to affirm the validity of Surgeon General Koop's fears that bodies and souls of American children are becoming addicted to the games, information obtained from this sample does suggest a wide level of participation in the games and a deep commitment for many participants. Of the 244 adolescents in the sample, 203 (83%) said they play arcade video games at least once in a while. Table 1 shows the amount of time and money spent on the games by established categories of light, moderate and heavy users.[4] On a weekly basis light users put in less than one-half hour and spend less than $1.50 on the games; heavy users spend around 4.5 hours and over $9.00.

Since the positive relationship between television viewing and arcade game playing noted in previous studies[2] served as the conceptual foundation

for methodologies employed here it is necessary to confirm for this sample the existence of a similar television-video game relationship. As a surrogate measure for detailed television viewing information, four questions (three based on Medrich's work with constant television households) were used to gauge the level of viewing in the child's home. It is logically argued and empirically substantiated (11, see footnote 2) that individuals living in constant television households are themselves generally heavier users of the medium. The following four questions comprised this index:

—In your house, is the television set on in the morning before you go to school?[5]
—In your house, is the television set on when you get home from school?
—In your house, is the television set on during dinner?
—In your house, is the television set on most of the evening?

Here, as found previously, the video game index demonstrated a positive correlation with the television viewing measure ($r=.24$ $p<.001$), thus confirming the complementary relationship between the two pastimes: the greater the likelihood that a subject comes from a constant television household (and so is likely to view more television himself), the greater amount of time he is likely to spend at video arcade parlors.

The initial check in the uses and gratifications analyses sought to determine any relationship between general needs and the subject's commitment to arcade game playing. In the context of television uses and gratifications studies several researchers (5,6) have argued in favor of establishing base-line measures of subjects' needs in order to determine if individuals with more compelling needs may more aggressively seek gratification from media

sources. Accordingly, in the present case we sought to determine if there were any recognizable need differences among subjects. For instance, did heavy arcade game users have a greater need for escape than light users, a greater need for isolation and so forth.

In order to determine the structure of these initial needs statements, responses to the first seventeen items were submitted to a factor analysis (principal-factor analyses with iterations; varimax rotation). As table 2 depicts, three principal sets of needs emerged:[6] 1) Escape/solitude. This category provides for the need to relax, and to get away from everyone and everything once in a while. 2) Fantasy. This factor is characterized by the need to pretend and make-believe. 3) Group membership. The two items which comprise this factor deal with the perceived importance of joining groups.

Pearson correlation statistics displayed in Table 3 demonstrate that in only one case are there any significant differences among subjects' commitment to arcade video game playing and their perceived importance of needs described by the three factors. The weak positive relationship between the video game index and the need for escape and solitude suggests that more avid video game players in this sample perceive a more compelling need to get away from things. For the remaining factors, it appears there are no significant relationships, i.e. between the arcade game commitment index and the perceived importance of fantasy behavior or the need for group membership. Such an observation establishes at the outset the similarity of perceived needs among subjects despite their arcade game playing habits. Except, perhaps, for the need to escape, one cannot readily attribute a heavier arcade attendance schedule to compelling needs experienced disproportionately among members of the sample.

The final series of items considers the potential gratifications recognized by subjects in the video game playing activity. Each

respondent who claimed to play the games at least occasionally reported the degree of perceived truth for 27 statements linking arcade video game playing and possible gratifications. Here, as in the set of needs statements discussed above, a factor analysis was used to determine underlying structures among the items.

Table 4 provides a summary of factor loadings for the five factors that emerged; eleven items failed to load strongly on any factor and were subsequently eliminated from further analysis. The factors displayed here suggest five reasons associated with arcade video game playing: 1) Video games rate higher than human companions. The four items associated with this factor deal with characteristics judged higher (or as highly) for the video game playing activity than for human companions. For instance, the games were viewed as more exciting and more fun than human companions. 2) Video games teach about people. These items generally have in common an element involving the capacity of video games to teach about other people or to serve as a surrogate for another person. 3) Companionship. The three items in this factor suggest that video games provide companionship for users. 4) Action. Each of the three items comprising this factor suggest a direct, personal involvement of the game user in the action of the game. 5) Solitude/escape. The two items in this factor describe a condition where video games provide the user an opportunity to be alone and to find solitude in the context of playing.

Table 5 shows the relationship between each of these factors involving some perceived characteristic of arcade video game playing and an index representing the subject's commitment to playing of the games. In each case, the positive correlations provide evidence that heavier users more than light users perceive specific gratifications offered by the games,

and even with wording changes necessary to adapt the methodology to video game research, these patterns appear similar to those recorded in previous television uses and gratifications studies.

As Greenberg (4) and others have reported that people turn to television for a diversion (to "get away," to "forget") we similarly have discovered for video games, at least among the more devoted users, a belief that arcade games afford an opportunity to escape and seek solitude. In light of the observation that heavier video game players recognized greater importance in the need for escape and solitude, it may be argued that they find some gratification for this need in the games. An active participation in the workings of the games not only allows the player to join the action and so escape, it may compel him/her to do so. When the user places a quarter in the slot he/she buys several minutes of fantasy in which to escape into an abstract world having nothing to do with anything of the real-life environment.

Those same engaging qualities of the game that enable a player to escape similarly may provide him/her with an an opportunity to abandon momentarily a passive life-role and allow that child to become a member of the cast. Video specific items in Factor 4, which have no correlates in previous television uses and gratifications research, clearly describe a situation in which the arcade game player sees him/herself as an active participant. While at the controls the player is transported from the sidelines into the arena where he/she is under the spotlight, in center ring. Although these data provide evidence that heavier video game users are more likely to subscribe to this involvement feature of game playing, they do not offer any information regarding psychological characteristics of these individuals. Are certain children more likely to seek this involvement gratification from arcade video games because they are not well accepted

among their peers, or for some other reason find their real-life role to be as an onlooker and not as a participant? If a child has a need to engage in the action he/she may play the games to gratify this need, selected perhaps not as the optimal choice, but at least as an acceptable choice according to the "satisficing" process described by March and Simon (7).

Indeed it may not be some inherent personality characteristic, but rather some feature of television viewing that stands to explain these observations. As a passive activity, watching television provides a host of vicarious experiences for the child, but never allows him/her to engage actively and personally in the scenarios. Certainly in the context of television viewing the child has no control over ongoing events as he does with video game playing. Given the complementary relationship between television viewing and arcade video game playing, it appears that heavy viewers, so often deprived of active participation and control, are most eager to seek an active role by playing the games.

If from the first two factors there is evidence that video games provide a kind of electronic involvement for players, the remaining three factors may suggest the games offer electronic friendship. Three factors reported here dealing with some aspect of human friendship demonstrate a significant relationship with arcade game playing. We see in Factor 1 that subjects who spend a greater amount of time at the games are more likely to agree that playing the games is more fun, exciting, and in general, more desirable than being with human companions. Similarly, the more a child plays, the more likely he/she is to support statements comprising Factor 2 that video games offer an opportunity to learn about other people.

This finding of a positive relationship between a commitment to video

game playing and the belief that arcade parlors offer social lessons is perplexing for lack of an obvious explanation, although two plausible and quite divergent interpretations may be proposed. First, arcade users may, in fact, recognize the video parlor as a gathering place in which peers congregate not only to play the games but to engage in social interaction. From such a perspective, the child recognizes an opportunity to experience human companionship and so sees a chance to learn about other people, and to learn how to act around other people. Although characteristics of social interaction at video parlors were not a focus of this study, respondents were asked if they played video games at the arcade alone or with a companion. In response to this question, a large majority (74%) said they played by themselves. This does not offer evidence that the arcade milieu is limited in the potential for social interaction, but it does strongly suggest the actual playing experience is typically a solitary activity. When the child is interacting with the machine, there is a strong likelihood he/she is not interacting with other people. This social milieu of video arcades deserves further exploration and definition.

A second possible interpretation deals solely with the player-game interaction process. Here it is proposed the player actually perceives the game as a kind of surrogate companion and his/her interaction with the game as a social interaction. From this view experiences with the games thus impart lessons about people. Such a bizzare interpretation finds modest support in the observed statistical relationship between subjects' commitment to arcade video game playing and their responses to three items comprising the companionship factor. In this factor we observed that heavy game users were more likely than light users to agree that arcade games were good companions for them, were almost like friends to them and helped them forget they were alone. If among more avid arcade enthusiasts

there is a real sense of companionship it would follow that such individuals may develop a perception that the games filled a variety of roles generally observed in human relationships. At this point there is a need to expand the scope of research to include greater detail on the nature of the perceived companionship offered by the games.

Using typologies of needs developed for television uses and gratifications research as a lead for this study, it is evident that adolescents observed here play games in video arcade parlors for many of the reasons they watch television, and more. They are temporarily transported from life's problems by the activity, they experience a sense of personal involvement in the action when they work the controls, and, perhaps most significant of these findings, it appears they perceive the games as a source of companionship, not just in addition to human companionship, but, perhaps, in place of it. On three dimensions measured here there is an indication that heavy users are more inclined to perceive this "human surrogate" element in the games. They rate the games higher than human friends on levels of excitement, ease of interaction and fun. They, more than light users, subscribe to the notion that the games teach players about people, and they are more likely to agree that the games provide companionship.

It is this collection of general findings cast in the light of needs "satisficing" that suggests a serious implication of game playing for socialization of the heavy user. Through human contact in various settings, the adolescent learns the skills and lessons that enable him/her to function as a participating member of the society. Human contact has always been critical in the process which shapes, molds and forms the young person into the adult he/she will become. We have seen evidence that

heavy television viewers, already displacing occasions for human contact with viewing activities, may, indeed, be those who are spending greater amounts of time with arcade videc games. Given the displacement costs in terms of opportunities for human contact there is reason for concern about implications of the positive realtionship found between arcade games usage and the perception these games provide a surrogate companion. It may be argued that to some degree many of the heavy users are "satisficing" a companionship need with attainable video games rather than the less available (less fun, less exciting) human companions. Based on these observations, there appears to be adequate reason for concern about the potential impact of these games, particularly on the heavy user. As the character of video game technology and usage patterns among users change in upcoming years, it is important that ongoing research be conducted on the cumulative effects of playing.

Footnotes

[1]Indexes searched included Psychological Abstracts, Communication Abstracts and Sociological Abstracts.

[2]The manuscript reporting details of this study is currently undergoing journal review. Copies may be obtained from the author.

[3]The following items were developed from pretest studies: I go to video game arcades because it's like being in another world. I go to video game arcades because it lets me think by myself. I go to video game arcades because it teaches me what other people are like. I go to video game arcades because it helps me learn how other people act. When I play video arcade games it lets me do things rather than just watch other people do things. Playing video games is easier than being with other people. Playing video games makes me part of the action. Playing video games lets me pretend I'm someone else.

[4]An index developed from the following formula provided the basis for these categories. It is argued the level of commitment to arcade video games can be represented by the time and money spent on the games. The sample was divided into thirds based on this formula:
(visits/week) X (average duration of visits) X (money spent/visit)

[5]A.C. Nielsen reports that the most substantial recent increases in viewing have occurred in the early morning hours. (Reported in Newscast, Number 1, A.C. Nielsen Co., 1982). This fourth category was added to Medrich's original three.

[6]The reader should note that some statisticians believe it takes at least three variables in order to define a factor unambiguously. In some cases reported here only two variables load on a single factor -- these factors should be viewed with caution.

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Table 1: Amount of time and money spent at video arcades by light, moderate and heavy viewers.

Arcade Games* Use	n	%	Average No. Visits/week	Average Duration of visit	Average Money Spent/visit
Light	65	33	less than one	.5 hr.	$1.50
Moderate	71	35	1.2 times	1.0 hr.	2.30
Heavy	66	33	3 times	1.5 hr.	3.00

*Based on 202 respondents who said they played arcade video games at least once in a while.

Table 2: Factor loadings for initial needs statements.

How important do you think it is to...

	Factor Loading
Escape/Solitude (Factor 1)	
...get away from everything now and then	.659
...be alone sometimes	.649
...get away from everyone once in a while	.640
...relax	.483
Chronbach's Alpha: .685	
Fantasy (Factor 2)	
...to pretend you are in some exciting adventure	.711
...make-believe	.527
Chronbach's Alpha: .550	
Group Participation (Factor 3)	
...join clubs	.662
...be in a group with other people	.414
Chronbach's Alpha: .448	

Table 3: Correlation analysis of video use index with initial needs factors.

	Video Use Index	
	r	p
Escape/Solitude	.104	<.056
Fantasy	-.062	<.167
Group Participation	.045	<.245

Table 4: Factor loadings for video arcade game needs gratifications

	Factor Loading
Video Games Over Friends (Factor 1)	
Playing video games is as exciting as being with my friends	.716
It's more fun to be playing video games than playing with friends	.707
Playing video games is more exciting than being with people	.679
Playing video games is easier than being with other people	.669
Chronbach's Alpha: .834	
Learn About People (Factor 2)	
I go to video game arcades because it teaches me what other people are like	.626
I go to video game arcades because it helps me learn how other people act	.565
When I play video arcade games it's like being with another person	.543
I go to video game arcades to learn how to act around other people	.499
Chronbach's Alpha: .667	
Companionship (Factor 3)	
Playing video games is almost like being with a friend	.607
Playing video games helps me forget I'm alone	.522
Video games are good companions for me	.437
Chronbach's Alpha: .749	
Action (Factor 4)	
Playing video games makes me part of the action	.582
When I play video arcade games it lets me do things rather than just watch others do things	.534
Playing video games gives me something to do when I havn't anything else to do	.463
Chronbach's Alpha: .666	
Solitude/Escape (Factor 5)	
When I go to video game arcades I can get away by myself	.732
I go to video game arcades because it lets me think by myself	.450
Chronbach's Alpha: .629	

Table 5: Correlation analysis of arcade video use index with gratification factors.

	Arcade Video Use	
	r	p
Video Games Over Friends	.219	<.001
Learn About People	.148	<.019
Companionship	.267	<.001
Action	.215	<.001
Solitude/Escape	.267	<.001

(Based on n=202)